

REMARKS

Status of the claims

Claims 1-9, 12-19 and 21-50 are pending in the application. Claims 6, 7, 18, 26, 29, 30 and 40-50 are withdrawn from further consideration. Claims 1-5, 8, 9, 12-17, 19, 21-25, 27-28 and 31-39 are rejected. Claims 10, 11, 20 and 24-37 are canceled. Claims 1, 8, 13, 16, and 21 are currently amended. No new matter has been added.

Amendments to the specification

The specification has been amended by placing the statement that this application is a continuation-in-part of non-provisional patent application U.S. Serial No. 09/573,147, filed May 17, 2000, which claims benefit of provisional application U.S. Serial No. 60/134,486, filed May 17, 1999 following the title of the application.

Specification objection

The disclosure is objected to because the first paragraph in the Specification should indicate up-to-date claims of benefit to priority U.S. Applications. The Applicant has amended the specification by placing the cross-reference to related application following the title of the instant application. Accordingly, the Applicants respectfully request that the objection to the specification be withdrawn.

Claim objection

Claims 9 and 32 were objected to because claims 9 and 32 were not further limiting claims 1 and 24, respectively. Claim 24 was objected to because claim 24 was the same in scope as claim 1, since the intended use of claim 1 was not given patentable weight. Claims 16 and 34 were objected to because of the following informalities: stainless steel was elected and titanium has been removed by amendment.

Claims 24, 32 and 34 are cancelled herein. Accordingly, the objection to claims 24, 32 and 34 is moot. Claim 1 has been amended by excluding the word combination "wherein said biomolecule is biomaterial". Consequently, claim 9 is not further limiting claim 1. Claim 16 has been amended by excluding the word combination "stainless steel"

and including the word combination "titanium alloy". In view of the amendments to claims 1 and 16, the Applicants respectfully requests that the objection to claims 9 and 16 be removed.

The 35 U.S.C. §102 rejection

Claims 1-5, 8, 9, 12-17, 19, 21, 22, 24, 25, 27, 28 and 31-37 are rejected under 35 U.S.C. §102(b) as being anticipated by **Klinger et al.** (J. Biomed. Mat. Res., 1998, 36(3), pgs. 387-393). Applicants respectfully traverse this rejection.

The Examiner argues that **Klinger et al.** teaches albumin and titanium alloy such as titanium dioxide in composition. The Examiner also states that titanium can bind more than one albumin and binds on the albumin at multiple sites. The Examiner concludes that claims 12-14, 19-22 and 35-37 are inherent properties of the titanium or bound titanium to albumin either before, during or after the exposure to a radiofrequency. The Applicants respectfully but vigorously disagree.

The Applicants respectfully submit that **Klinger et al.** is directed to an investigation of the role of electrostatic interactions in the adsorption of human albumin to titanium oxide (TiO_2) *in vitro*. The binding profile of human albumin to titanium was analyzed according to an adsorption isotherm. Purified human serum albumin (HSA) was suspended with native, calcium-, magnesium-, or potassium-treated commercially pure Ti powders. The results of **Klinger et al.** point to the involvement of electrostatic interactions in the adsorption of HSA to TiO_2 .

Initially, Applicants note that **Klinger et al.** used titanium oxide in their investigation. However, titanium oxide is not a metal (for it is not a chemical element or alloy of chemical elements), and so neither is it a titanium alloy (which has also to be a metal).

Secondly, the Applicants submit that **Klinger et al.** does not teach use of electromagnetic energy. While macroscopic pieces of pure titanium could be inductively heated, it is not possible to inductively heat TiO_2 powder. The Applicants submit that TiO_2 is not a good conductor of heat or electricity. **Klinger et al.** does not teach how to inductively heat this material.

Thirdly, the Applicants respectfully submit that **Klinger et al.** employed calcium-, magnesium-, or potassium-treated Ti powders. In the present invention, titanium, titanium alloy or TiO₂ modified by any chemical means such as Ca, Mg or K were not used.

Finally, the Applicants note that **Klinger et al.** describes an adsorption of human albumin to titanium oxide. The present invention, however, does not rely on adsorption for the process to work. In the present invention a protein is not specifically adsorbed onto Ti; the protein is in close proximity to a susceptor, such as a pure metal or ion such as Na⁺.

Claims 24-37 are canceled herein. Accordingly, the rejection of claims 24, 25, 27, 28 and 31-37 under 35 U.S.C. §102(b) is moot. In view of the arguments presented herein, the Applicants respectfully submit that **Klinger et al.** do not anticipate claims 1-5, 8, 9, 12-17, 19, 21, and 22. Accordingly, Applicants respectfully request that the rejection of claims 1-5, 8, 9, 12-17, 19, 21, and 22 under 35 U.S.C. § 102(b) be withdrawn.

The 35 U.S.C. §103 rejection

Claims 23, 38 and 39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over **Nomoto et al.** (US 20030113368). The Applicants respectfully traverse this rejection.

The Examiner states that the instant invention claims compositions comprising a biomolecule, a metal susceptor and a pharmaceutical incorporated into a liposome. The Examiner argues that **Nomoto et al.** teaches compositions comprising albumin, titanium and estrogen (pharmaceutical) in a liposome. The Examiner states that **Nomoto et al.** teaches said liposomes as a structure that has both drug holding capabilities and sustained release properties. The Examiner concludes that it would have been obvious to make a composition of albumin, a titanium alloy and a pharmaceutical (e.g., estrogen), and incorporate it into a liposome. Applicants respectfully disagree.

Applicants submit that **Nomoto et al.** is directed to a biocompatible polyhydroxyalkanoate-coated liposome having a highly stable membrane, with sustained releasability of a substance encapsulated thereon being controlled, and a production method thereof. The Applicants respectfully submit that **Nomoto et al.** mentions the use of titanium oxide as a white pigment. The Applicants reiterate that titanium oxide is not a


metal (for it is not a chemical element or alloy of chemical elements), and so neither is it a titanium alloy (which must also be a metal). Therefore, **Nomoto** et al. does not teach the use of titanium alloy in a composition with albumin and a pharmaceutical. Further, Applicants submit that **Nomoto** et al. does not disclose use of electromagnetic energy. The Applicants note that **Nomoto** et al. does not teach how to inductively heat the liposome structures, and therefore, to alter a material through magnetic induction. The Applicants respectfully submit that a tremendous amount of experimentation would be required and performed by a person having ordinary skill of the art in order to arrive at the claimed invention of methods and compositions directed to activated delivery of biomolecules using electromagnetic energy.

Thus, Applicants submit that claims 23, 38 and 39 are not rendered obvious under 35 U.S.C. §103(a) as being unpatentable over **Nomoto** et al. In view of the arguments presented herein, the Applicants respectfully request that the rejection of claims 23, 38 and 39 under 35 U.S.C. §103 be removed.

This is intended to be a complete response to the Office Action, mailed August 17, 2010. A Petition for Three Months Extension of Time and PTO-2038 are enclosed. In the absence of this form, please debit any applicable fees from Deposit Account No. 07-1185. If any issues remain outstanding, the Examiner is respectfully requested to telephone the undersigned attorney of record for immediate resolution.

Respectfully submitted,

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